tem, and this is likely to get worse rather than better. There are also cultural, language, educational and distance barriers to consumer access to services which are substantial and have somehow to be overcome in both rural and urban communities. There must be many ways in which automation and programmed services can be used to help solve some of these problems, while maintaining and even improving personalization and individualization where this is necessary.

It is suggested that automation and programmed services should *only* be used in health care when they may be expected to (1) increase the reach or productivity of physicians, of other scarce personnel or of a community health care delivery system so that a larger number of persons will receive a better level of care than would otherwise be the case; (2) achieve economies in the cost of each service rendered because of the volume of usage, often referred to as economy of scale; and (3) promote quality through professional control of the subject matter or content of the automated or programmed service to be rendered. If these guideposts of improved access, cost containment and quality assurance can be followed, then these services will become useful and acceptable adjuncts to community health and patient care, and there will need be no fear of control of health care by any sort of non-thinking, impersonal, automated monster or system.

M.S.M.W.

The Marijuana Problem

THE EPIDEMIC-LIKE SPREAD of the use of marijuana in the United States in the past few years has caused a great deal of anxiety in the public. The extensive use of marijuana that was first seen on college campuses has spread downward into the high schools and the elementary schools and into the communities where it now is not confined to any age, social or occupational group.

In the past, marijuana use was frequently associated with psychopathy and most narcotic addicts gave a history of having used marijuana before starting on "hard" drugs. Passage of the Marijuana Tax Act in 1937, the listing of marijuana along with opium and coca leaves on the Special Tax Stamp, and the removal of marijuana from the United States Pharmacopoeia and the National Formulary in 1941 gave the impression that marijuana was a "narcotic," that it was addicting and therefore dangerous. It became extremely difficult for investigators to obtain either a license or the drug, and research on the drug for all practical purposes ceased.

It was known that practically all hippies used marijuana and that many of the youngsters who were dropping out of school or developing into serious behavior problems at home were using drugs.

Harsh penalties, intensified police activity to apprehend the law-breaking marijuana user, statements about dangers issued by the Committee on Problems of Drug Dependence of the National Research Council and the Committee on Alcoholism and Drug Dependence of the AMA Council on Mental Health, warning by the World Health Organization, and educational programs in schools had little or no effect in stemming the rising tide of marijuana use.

The use of marijuana was associated with experimentation with many other drugs—LSD, peyote, mescaline, amphetamines, barbiturates, hashish and the volatile component of glues. Increasing numbers of parents seeing their children behaving peculiarly suspected they were using drugs, but were at a loss to know what to do.

Physicians who were consulted by concerned parents, law enforcement officers and legislators often expressed opinions about the drug which were based on prejudices rather than knowledge, or on "the little knowledge" that proverbially is a dangerous thing.

Many conflicting opinions were expressed. There were many respected lawyers and teachers who advocated legalizing marijuana. Many investigators urged caution in coming to any conclusion regarding the effects of continued marijuana use, pointing out that no reliable long-term studies had been done. Revolutions in dress, in sexual behavior, in manners, and in attitudes toward life, authority figures and the

establishment developed simultaneously with the increase in use of marijuana. This explains in part the feeling that marijuana use is an expression of rebellion against parents and the establishment, and indicative of a social change that is of even greater concern at present than the impairment of health that may result. Some observers have felt that the illegality of marijuana was a motivating force rather than a deterrent.

It has become obvious that to look upon the people who use marijuana as all alike would be as unfounded as thinking of all those who use alcohol as being the same.

Marijuana is used for a wide variety of reasons. Some people have tried it out of curiosity and quit. Some continue to use it sporadically on the urging of friends or because of a wish to belong. Some use it occasionally for relaxation, some for stimulation and some for socializing and to remove inhibitions. The intoxication that is experienced seems to be associated with a transient toxic encephalopathy that produces measurable changes in some aspects of brain function that are described in Dr. Chun's excellent review article on marijuana in this issue.

The effects that are sought by the social user seems to be euphoria or feeling of well-being, a decrease in social anxiety, sharing an experience and often an increased sensual experience with music, colors, or beauty. Social users hardly ever have a bad reaction or, as far as is now known, any serious long range ill effect—or habituation.

There are those, however, who have used marijuana frequently over a long period primarily as an escape from reality or as a means of making life tolerable. These users, who are dependent on marijuana and almost without exception use other drugs, too, in some respects, resemble chronic alcoholics but are often more disturbed. The other drugs they use produce far more problems than the marijuana.

Studies of personalities of users and non-users on a college campus revealed far less in the way of differences than would be expected. Even chronic users were found to be doing well in their work and in their lives. They did not show the poor motivation, the apathy and relaxed drifting that has been described by some observers as a frequent complication. It is possible that some portion of those who may have been so affected have dropped out of school, but the size of this group is simply not known.

There is no doubt about the existence of very serious emotional disorders in some chronic marijuana users (or abusers). Some have severe personality disorders and some are borderline or overt schizophrenics. Many need to be treated in hospital for severe disabilities. Many were clearly ill before they started using marijuana (and other drugs). In some instances a psychiatric illness appears to be precipitated by excessive drug use (including marijuana) but even here pre-existing significant psychopathology is the rule rather than the exception. It is not unusual to see a patient who has used marijuana to escape from reality. Some patients decompensate while seeking mystical experiences or psychological insights. Acute psychiatric reactions following marijuana use have been described. However, they are rare and clear up rapidly with treatment when the predisposition was not great. Hekimian and Gershon[1] reported that 50 percent of drug abusers who were admitted to Bellevue Hospital had been schizophrenic before taking drugs.

The widespread use of marijuana is still so new that there is as yet no reliable data on the effects of frequent, continued use. Prospective studies may help in distinguishing between the roles of premorbid personality and drug effect in persons who show adverse reactions.

Animal experiments indicate that, as compared with alcohol or barbiturates, marijuana is an unusually safe drug. Huge doses have been given without causing death. Nor have there been any reliable reports of human fatalities. The Indian Hemp Commission that studied the problem of marijuana use over 75 years ago[2] concluded after a most careful and exhaustive investigation that there was no connection between marijuana and violent crime and that *moderate* use produced no moral injury. The Commission concluded that "excessive consumption, on the other hand, both *indicated* and *intensified* moral weakness and tended to lead to loss of self respect, occasionally to dishonest practices that were associated with degraded poverty but rarely with violent crime." There was no evidence of its producing chronic insanity except as might occur with chronic excessive use of alcohol.

It seems clear that marijuana is not addictive. Its use does not result in physical dependence. Tolerance does not develop and discontinuance of marijuana does not produce withdrawal symptoms. Nevertheless, as McGlothlin[3] and others

have pointed out, the concern about marijuana is not limited to the harmful effects that drug abuse may produce in individuals, but to the burdening of society with the care and support of persons who may become disabled. But of even greater importance is the possibility that marijuana abuse is a new form of disaffection—a symptom of dissatisfaction with the present values, ethics and direction of society, the solution of which lies in the resolution of some of the major conflicts between the younger and older generations, such as those about the Vietnam war.

Not only is there a need to maintain an unbiased perspective about the "pot scene" that has been unfolding, but a need to develop imaginative controls to replace the punitive approaches that seem to have aggravated rather than solved the problem.

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Leukemia in Childhood

A LITTLE OVER 20 years ago the first leukemic child was treated with methotrexate and the age of modern chemotherapy was ushered in. Before the use of the effective anticancer drugs, a child with acute leukemia might expect to survive perhaps three months. At that point in time it was not at all certain that medical therapy conferred any benefit at all. The road since has been arduous and expensive, but has generally led in the right direction. Only in the last few years has the physician been able to say with confidence that it is more humane to the leukemic child to treat his disease aggressively than to leave it untreated. This is the central theme of the Specialty Conference on childhood leukemia published in this issue of CALIFORNIA MEDICINE.

By the early 1950's the introduction of the folate-antagonists had indicated a new direction and within a few years median survival had increased to six months. The subsequent milestones in treatment were: the introduction of corticosteroids and 6-mercaptopurine between 1950 and 1955; the start of combination chemotherapy and the simultaneous demonstration of the efficacy of platelet transfusions in the early 1960's; the evolution of sophisticated programs of "maintenance" and "consolidation" therapy in the decade between 1960 and 1970; and finally within the last few years, the demonstration of a new mode of chemotherapeutic attack with L-asparaginase—an attack which takes advantage of a biological difference between normal and malignant leukocytes.

The investment in trying to improve therapy has been massive in terms of physicians' efforts and money spent. The emotional price paid by the parents and children cannot be quantitated. The results of this effort are that the median survival in the best centers is now about three and a half years and a small minority of patients are apparently cured of their disease. However, a majority of patients still die of leukemia, usually from the same complications that caused most deaths before the use of chemotherapy—hemorrhage and infection.

With the greater availability and more intelligent use of platelet transfusions, hemorrhage as a cause of fatality has been strikingly reduced. Infection remains, however, as a major cause of death. It is usually the consequence of too few normal granulocytes. The rapid advances achieved by chemotherapy have now plateaued, largely because "obliterative" therapy is limited by the destruction of normal bone marrow elements and, in particular, the granulocyte.

Clearly, this is one of the areas for future clinical research. The means of providing granulocytes are theoretically at hand. Pilot programs have already demonstrated that normal or *mature* leukemic granulocytes can function to combat microbial infection when antibiotics have failed. We should now be implementing